

# ETHOS URBAN

## Crime Prevention Through Environmental Design

Assessment Report

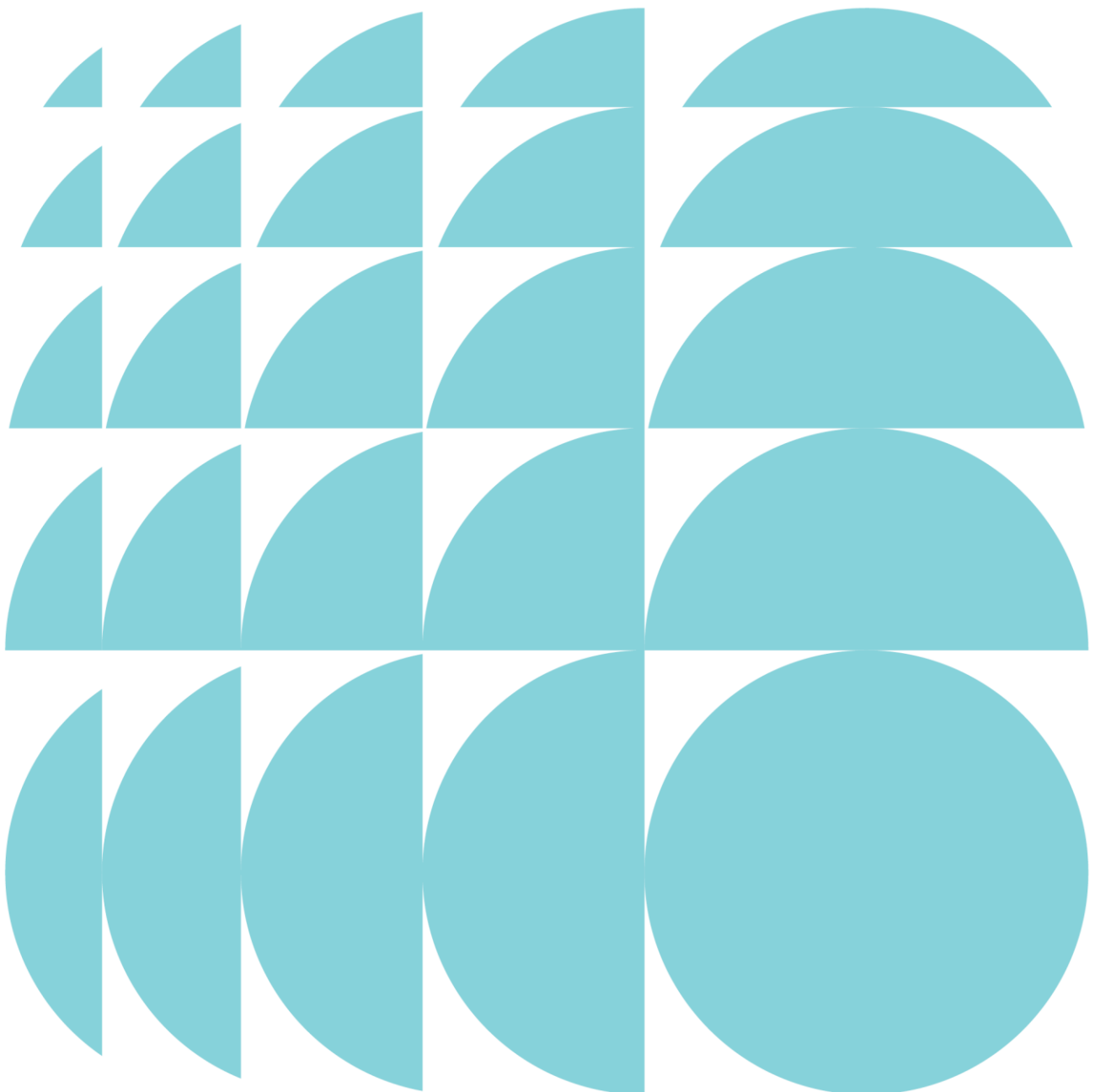
Stage 1B Public Domain

Hickson Park, Watermans Quay, Barangaroo  
Avenue, Wulugul Walk, Watermans Cove and  
Public Pier

Submitted to Department of Planning and  
Environment

On behalf of Lendlease (Millers Point) Pty Ltd

07 December 2017 | 10051



---

#### CONTACT

Michael Rowe                      Director                      mrowe@ethosurban.com.au                      02 9956 6962

---

Reproduction of this document or any part thereof is not permitted without prior written permission of ACN 615 087 931 Pty Ltd.

This document has been prepared by:



This document has been reviewed by:



Christopher Curtis                      7/12/2017                      Daniel West                      7/12/2017

---

Reproduction of this document or any part thereof is not permitted without prior written permission of Ethos Urban Pty Ltd. Ethos Urban operates under a Quality Management System. This report has been prepared and reviewed in accordance with that system. If the report is not signed below, it is a preliminary draft.

| VERSION NO. | DATE OF ISSUE | REVISION BY | APPROVED BY |
|-------------|---------------|-------------|-------------|
| C           | 30/1/2017     | CC          | BH          |
| F           | 23/8/2017     | CC          | DW          |
| G           | 6/11/2017     | CC          | CC          |
| H           | 7/12/2017     | CC          | CC          |

Ethos Urban  
ACN 615 087 931 Pty Ltd.  
www.ethosurban.com  
173 Sussex Street, Sydney  
NSW 2000 t 61 2 9956 6952

---

# Contents

|            |                                              |           |
|------------|----------------------------------------------|-----------|
| <b>1.0</b> | <b>Introduction</b>                          | <b>3</b>  |
| <b>2.0</b> | <b>The Site</b>                              | <b>4</b>  |
| 2.1        | Site Description                             | 4         |
| 2.2        | Surrounding Development                      | 7         |
| <b>3.0</b> | <b>The Proposed Development</b>              | <b>8</b>  |
| 3.1        | Design Description                           | 8         |
| <b>4.0</b> | <b>Nature of Recorded Crime</b>              | <b>16</b> |
| 4.1        | Crime Prevention Strategy                    | 21        |
| <b>5.0</b> | <b>Matters for Consideration</b>             | <b>21</b> |
| 5.1        | Surveillance                                 | 21        |
| 5.2        | Lighting/Technical Supervision               | 23        |
| 5.3        | Territorial Reinforcement                    | 24        |
| 5.4        | Environmental Maintenance                    | 24        |
| 5.5        | Activity and Space Management                | 25        |
| 5.6        | Access Control                               | 25        |
| 5.7        | Design, Definition and Designation           | 26        |
| <b>6.0</b> | <b>Crime Risk Rating and Recommendations</b> | <b>26</b> |

## Figures

|                                                                                                  |    |
|--------------------------------------------------------------------------------------------------|----|
| Figure 1 – Locality Plan                                                                         | 6  |
| Figure 2 – Barangaroo site showing the Development<br>Application site                           | 7  |
| Figure 3 – Key Spaces and Destinations within the<br>Barangaroo Public Domain                    | 9  |
| Figure 4 – The public domain area encompasses several<br>building footprints of Barangaroo South | 9  |
| Figure 5 - Detailed plan of the proposed design for<br>Watermans Quay                            | 10 |
| Figure 6 - Detailed plan of the proposed design for<br>Barangaroo Avenue                         | 11 |

# Contents

|                                                                                                          |    |
|----------------------------------------------------------------------------------------------------------|----|
| Figure 7 - Detailed plan of the proposed design of Hickson Park                                          | 12 |
| Figure 8 - Detailed plan of the proposed design for Wulugul Walk                                         | 13 |
| Figure 9 - Detailed plan of the proposed design of Watermans Cove                                        | 14 |
| Figure 10 - The proposed landscaping continues from the developed part of the wider site                 | 15 |
| Figure 11 - Hotspot map – assault – non-domestic violence related                                        | 17 |
| Figure 12 - Hotspot map – assault –domestic violence related                                             | 18 |
| Figure 13 - Hotspot map – breaking and entering non-dwelling                                             | 18 |
| Figure 14 - Hotspot map – stealing from dwelling                                                         | 19 |
| Figure 15 - Hotspot map – stealing from person                                                           | 19 |
| Figure 16 - Hotspot map – stealing from motor vehicle                                                    | 20 |
| Figure 17 - Hotspot map – malicious damage to property                                                   | 20 |
| Figure 18 - The pontoon area contains some oblique sightlines due to height differences (tide dependent) | 22 |

## Tables

|                                                                              |    |
|------------------------------------------------------------------------------|----|
| Table 1 - NSW Recorded Crime Statistics 2014-2016, Sydney (suburb)Conclusion | 17 |
|------------------------------------------------------------------------------|----|

## 1.0 Introduction

This Crime Prevention Through Environmental Design (CPTED) assessment has been undertaken to assess the elements of crime, and the fear of crime that may be associated with the proposed public domain area within the Barangaroo Stage 1B site and surrounding area.

CPTED is a situational crime prevention strategy that focuses on the design, planning and structure of the environment. This assessment aims to identify the potential facilitation of crime created by the proposed development by assessing the development in accordance with design and place management principles of CPTED.

Ethos Urban has prepared this assessment in accordance with the methods and resources of the NSW Police Force Safer by Design Course. The assessment uses qualitative and quantitative measures to analyse the physical and social environment in which the proposed development is located, and recommends actions to mitigate crime opportunity in accordance with the Australian and New Zealand Risk Management Standard AS/NZS 31000:2009.

In accordance with the NSW Department of Planning and Environment's guidelines (2001) the aim of the CPTED strategy is to influence the design of buildings and places by:

- increasing the perception of risk to criminals by increasing the possibility of detection, challenge and capture;
- increasing the effort required to commit crime by increasing the time, energy or resources which need to be expended;
- reducing the potential rewards of crime by minimising, removing or concealing 'crime benefits'; and
- removing conditions that create confusion about required norms of behaviour.

Landscape Drawings prepared by Grant Associates and Lighting Drawings prepared by Speirs+Major have been reviewed as part of this assessment.

In addition, the following tasks were undertaken in the preparation of this assessment:

- review of key guidelines on CPTED by the Department of Justice and the Safer By Design Manual by the NSW Police Force;
- collection and analysis of local and NSW State crime statistics from the Bureau of Crime Statistics and Research (BOCSAR); and
- a crime risk assessment, in accordance with the current NSW policy and practice, of the following regulation and assessment principles:
  - Surveillance
  - Lighting/technical supervision
  - Territorial reinforcement
  - Environmental maintenance

- Activity and Space Management
- Access control
- Design, definition and designation.

A site inspection would usually be undertaken to assess the current site conditions and situational crime prevention measures and safety impacts. However, given the proposed public domain area is a construction site no site risk assessment and inspection has been completed as the site is constantly evolving and currently has limited public access. Additionally, no comment from NSW Police has been obtained. Generally, NSW Police only provide comment during the formal assessment phase of a development application.

## Disclaimer

*CPTED strategies must work in conjunction with other crime prevention strategies and police operations. By using the recommendations contained within this document, a person must acknowledge that:*

- *there is no definitive measure 'safety'. Therefore, this assessment cannot be used as proof of a definitive measure of safety.*
- *this assessment does not ensure complete safety for the community, and public and private property.*
- *assessment and recommendations are informed by information provided, with observations made at the time the document was prepared;*
- *this document does not guarantee that all risks have been identified, or that the area assessed will be free from criminal activity if recommendations are followed; and*
- *this assessment has been undertaken on behalf of the applicant, and does not represent the opinions and expertise of the NSW Police Force.*

*The principles of CPTED aim to minimise the opportunity for crime, but it is recognised that environmental design cannot definitively eliminate opportunities for crime, or prevent a determined perpetrator from committing such crimes.*

## 2.0 The Site

### 2.1 Site Description

Barangaroo is located on the north-western edge of the Sydney Central Business District, bounded by Sydney Harbour to the west and north, the historic precinct of Millers Point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east and a range of new development dominated by large CBD commercial tenants to the south. The site is within the City of Sydney Local Government Area (LGA).

The 22 ha Barangaroo site is generally rectangular in shape and has a 1.4km harbour foreshore frontage, with an eastern street frontage to Hickson Road. It has been divided into three broad areas (as shown in **Figure 1**) known as :

- Barangaroo Reserve;
- Barangaroo Central; and
- Barangaroo South.

The development application, the subject of this report, falls within the Barangaroo South precinct. Part of Barangaroo South has been completed, and only two construction parcels remain. They are known as Stage 1A and Stage 1B.

The proposed public domain works fall within Stage 1B, and encompasses the land shown in **Figure 2**.

The site is currently surrounded by construction hoarding and is patrolled by formal security. Vehicular access is provided from Hickson Road for construction vehicles only.

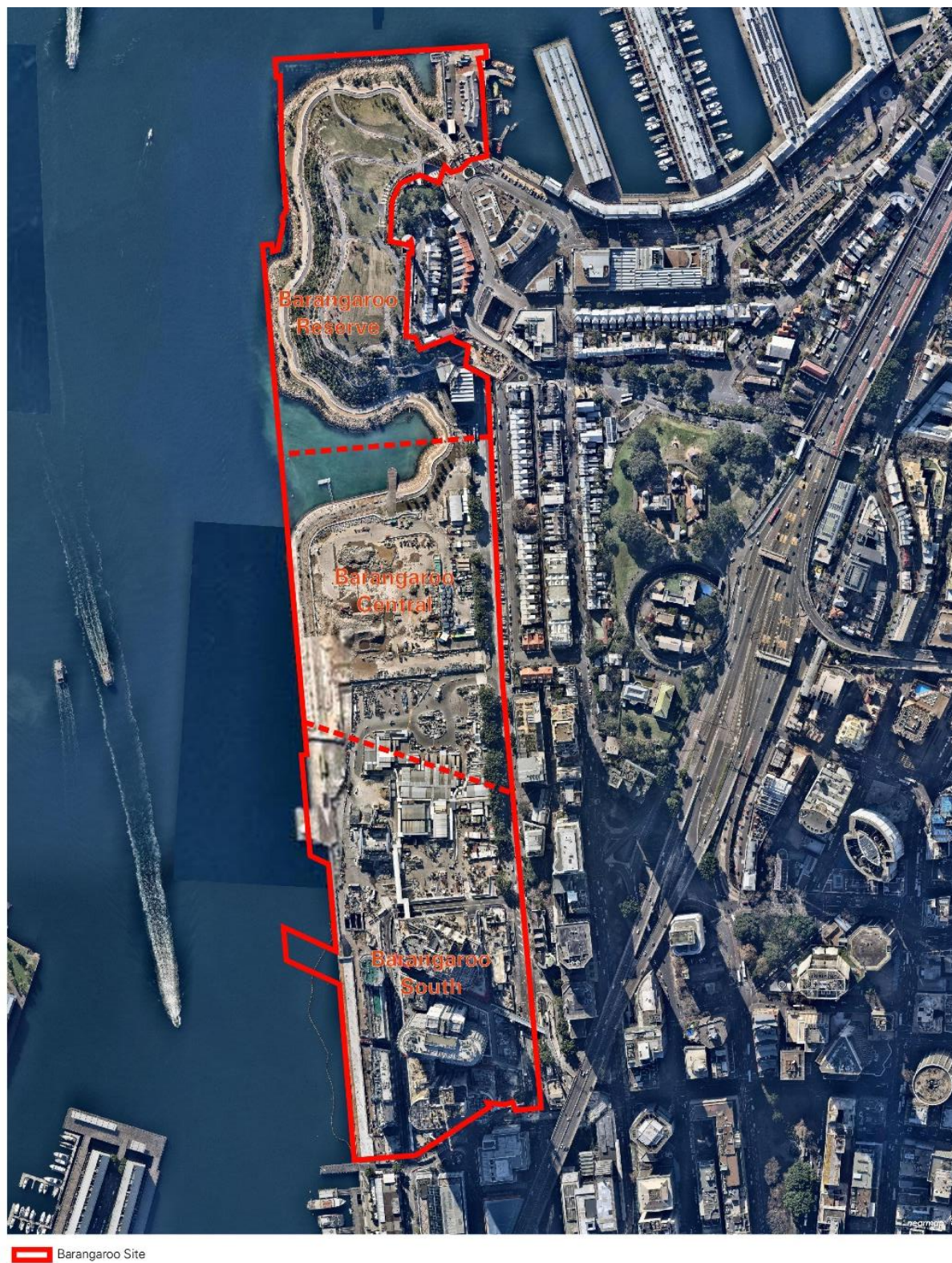
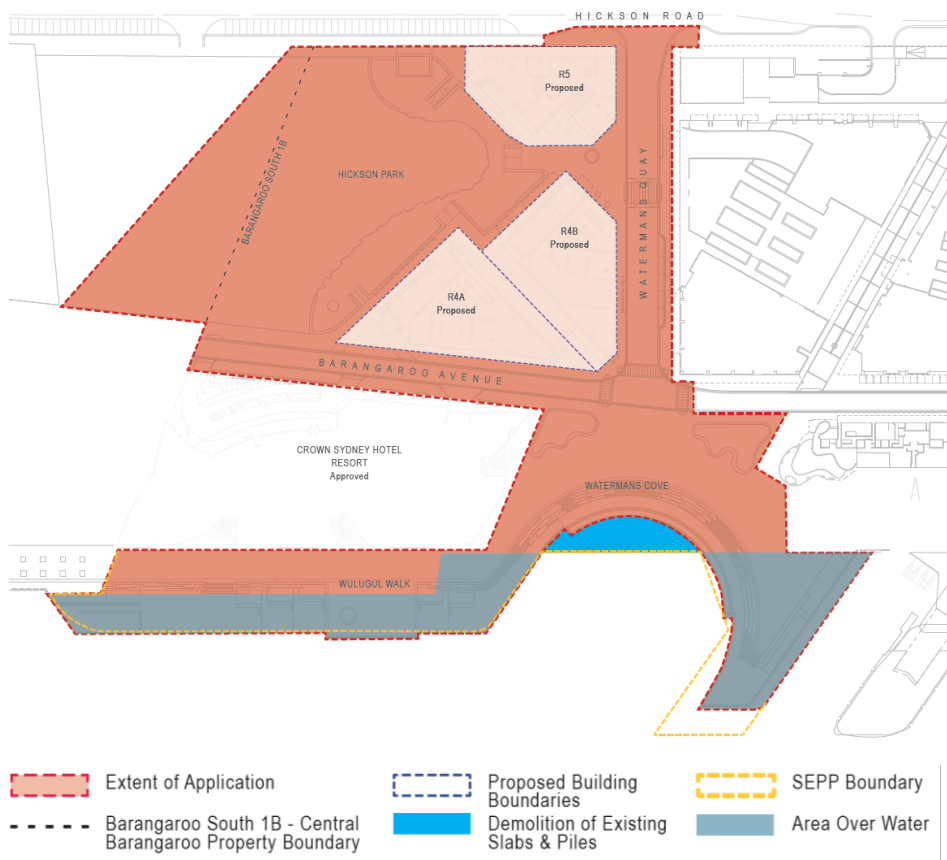


Figure 1 – Locality Plan



**Figure 2 – Barangaroo site showing the Development Application site**

## 2.2 Surrounding Development

Surrounding development comprises:

- Stage 1A construction parcel to the south;
- Barangaroo Central and the Crown Sydney Hotel Resort construction compound to the north;
- Hickson Road and the wider Sydney CBD to the east; and
- Darling Harbour to the west.

The closest existing buildings to the proposed public domain works are Commercial Building C3 and Residential Building R8. Under the approved Concept Plan (Mod 8), a future building, known currently as Building C1, is contemplated on land to the east of Building C3, fronting Hickson Road. A Development Application has recently been submitted for this building.

## 3.0 The Proposed Development

The proposed development comprises landscaping and public domain works associated with the Stage 1B area of the wider Barangaroo site. Specifically, the proposed development seeks consent for:

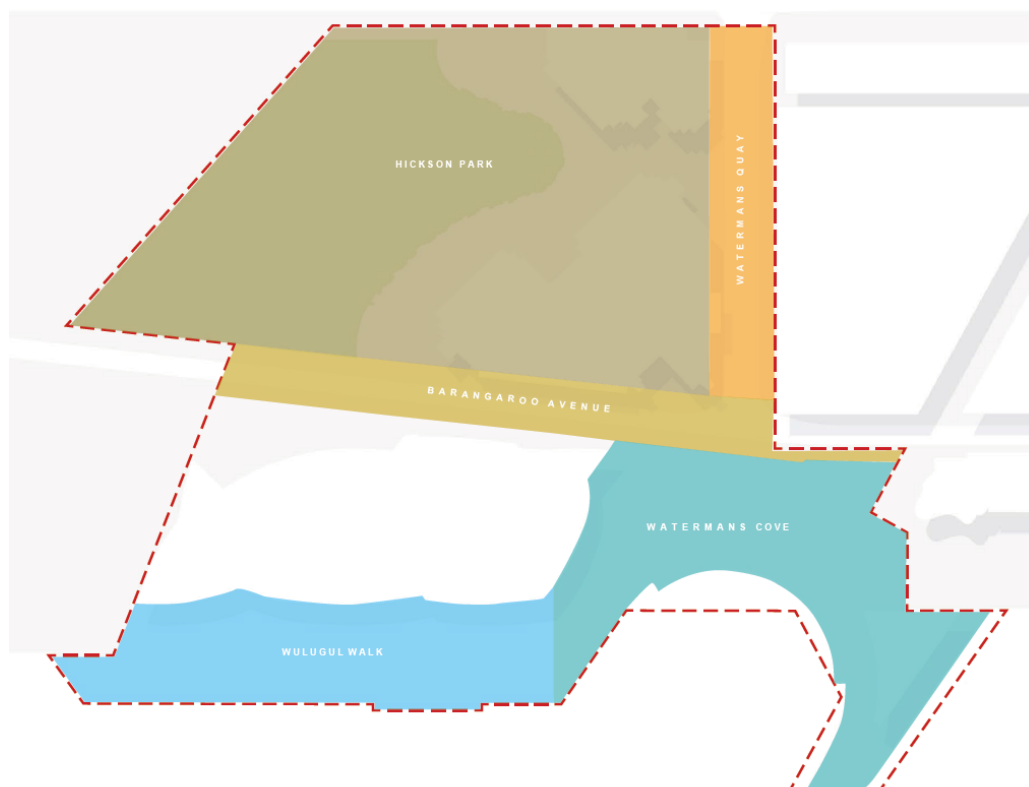
- Site preparation and remediation (if required);
- Construction of the public domain, comprising:
  - Watermans Cove;
  - the Public Pier in Darling Harbour, south of Watermans Cove;
  - Hickson Park, including a public amenities building;
  - Watermans Quay;
  - the remaining section of Barangaroo Avenue within the site; and
  - Wulugul Walk (including the expanded boardwalk required by condition of Concept Plan Mod 8).

### 3.1 Design Description

The public domain design is divided into five key areas:

- Watermans Quay;
- Barangaroo Avenue;
- Hickson Park;
- Wulugul Walk and Boardwalk; and
- Waterman's Cove.

The location of these areas are shown in **Figures 3** and **4**. A summary of each of the five key areas is provided below.



**Figure 3 – Key Spaces and Destinations within the Barangaroo Public Domain**



**Figure 4 – The public domain area encompasses several building footprints of Barangaroo South**

Source: Grant Associates

### 3.1.1 Watermans Quay

Watermans Quay is a two-way road which connects Hickson Road to Barangaroo Avenue, and runs in an east-west direction. The pavement design is consistent with the City of Sydney requirements and incorporates rows of street trees underlain by granite paving on both sides. The street trees are contained in tree pits below ground at regular intervals of both sides of the road. Driveway crossovers are defined on both sides of the road, with Smart Poles lining the road corridor to provide night time lighting.

The northern pavement will provide a pedestrian connection to the park and future residential towers identified as R4A, R4B and R5 in **Figure 2**. This area is defined by porphyry paving to indicate a transition between spaces. A fig raised planter garden also indicates a new space for pedestrians to enter, as a form of activity space management. Signage provides wayfinding assistance to users of the area.



**Figure 5 - Detailed plan of the proposed design for Watermans Quay**

Source: Grant Associates

### 3.1.2 Barangaroo Avenue

Barangaroo Avenue draws on the same design intent as Watermans Quay, with different paving types indicating a change in the management of each space. Street trees, again in tree pits below ground and with no mid-storey, line each side of the road which runs in a north-south direction.

Driveway crossovers are defined at various points along the road. Smart poles also line the road to provide lighting during night hours.



**Figure 6 - Detailed plan of the proposed design for Barangaroo Avenue**

Source: Grant Associates

### 3.1.3 Hickson Park

Hickson Park is located in the northern part of the development area, and is largely defined by its turfed open space. This area is proposed to be used for workers and residents for recreational activities including during lunch breaks. It is clearly defined by a change in underfoot paving. Several large planted areas provide for delineation between pedestrian traffic areas and the open space of Hickson Park itself.

An amenities and park storage building is located in the eastern area of the site. This building clearly identifies public entry locations compared to private storage areas. The intent of the amenities building is to provide a communal basin area for users of the facilities, with private bathroom spaces for male and female users. Accessible and family facilities are also provided.

The southern end of the park area provides a pedestrian linkage through to Watermans Quay, between the two future residential towers. Benches and tables are provided as part of the facilities in this area to encourage frequent use.

Tree species to be used in the park are generally high canopy species to provide for clear sightlines through these tree lines and across the open space area.

Lighting is also proposed around the pedestrian pathways of the space.

The park does offer opportunities for potential large-scale events to be conducted within the space. These would be subject to separate approvals as required.



**Figure 7 - Detailed plan of the proposed design of Hickson Park**

Source: Grant Associates

### 3.1.4 Wulugul Walk

Wulugul Walk is located along the western boundary of the site, fronting Darling Harbour and the future Crown Resorts development. Specific details of the Crown Resorts development including security measures are still being developed, outside of the Wulugul Walk public domain works. The location of the Crown Resorts entry in this area will contribute to pedestrian activity along this frontage.

The Walk provides a boardwalk aesthetic with shade trees, bench seating and lighting. A change in the materials used from paving to boardwalk timber delineates the two main areas within this space.

A change in levels at the northern end of this area will allow for future boat access at the proposed floating jetty area.



**Figure 8 - Detailed plan of the proposed design for Wulugul Walk**

Source: Grant Associates

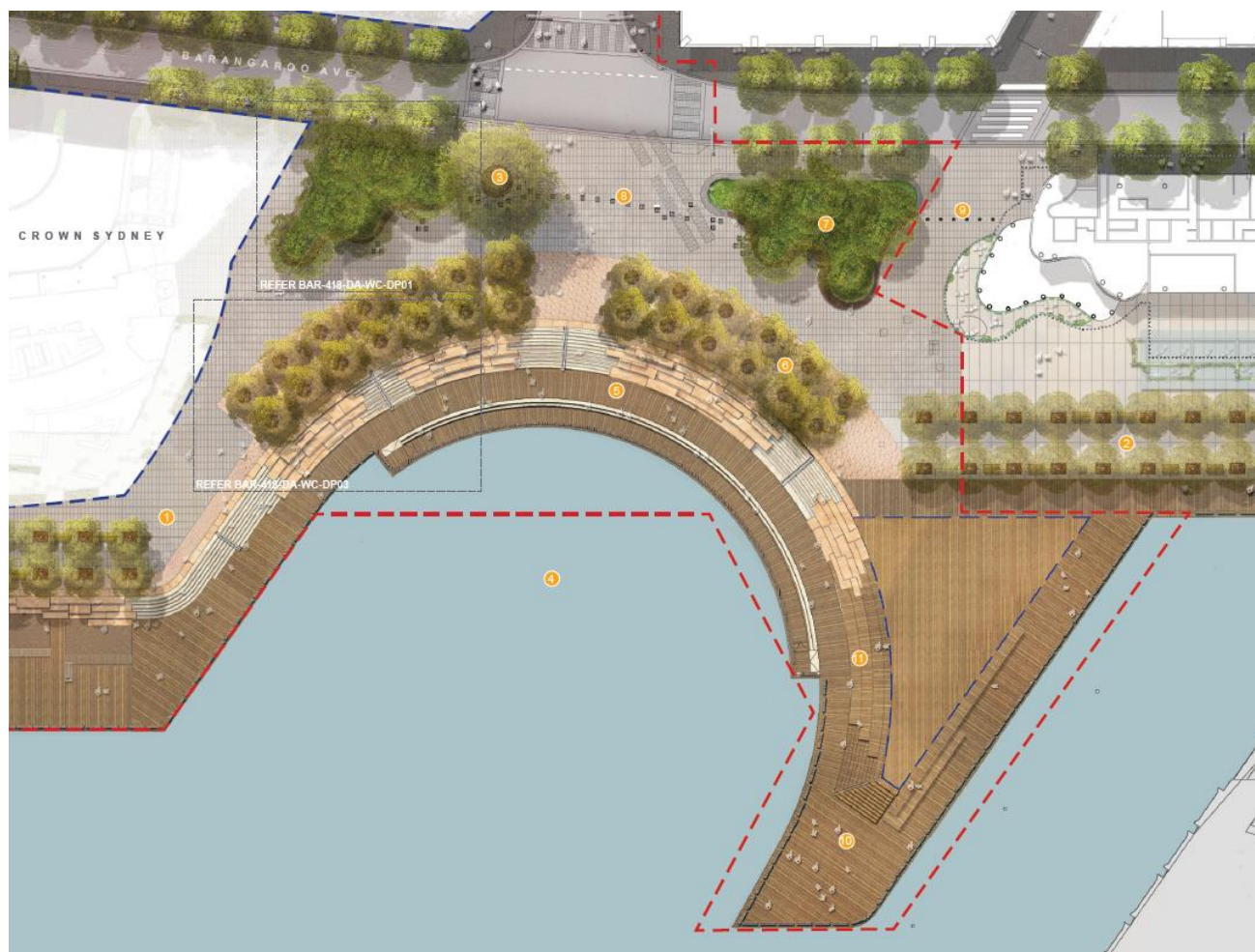
### 3.1.5 Watermans Cove

Watermans Cove connects Wulugul Walk, Watermans Quay and Barangaroo Avenue, providing a central meeting point for users.

It is clearly defined by its use of boardwalk materials and its distinctive circular shape. This allows for clear sightlines across the water and around the area.

The variations in height are produced by large areas of steps down to the water, with a large platform for implementation of a future public domain proposal provided at its southern most area.

Trees are to be provided with high canopies, contained within large planting areas with seating options. The design of this area, as with all other spaces in this public domain, clearly defines the space through the use of materials and wayfinding signage.



**Figure 9 - Detailed plan of the proposed design of Watermans Cove**

Source: Grant Associates

### 3.1.6 Access

Future pedestrian entry into the site will be provided from Hickson Road in the east, Barangaroo Avenue through the centre and along the boardwalk fronting Darling Harbour to the west. Vehicular access is afforded along the delineated roads.

### 3.1.7 Landscaping

It is proposed to provide a unified landscaping palette across the site to ensure consistency with the existing landscaping of Barangaroo to the south. This involves the use of tree species which have high canopies, and the location of feature trees at key locations throughout the public domain area. Four main planting character zones follow the division of the site as per above. Hickson Park itself will generally be turfed with vegetation providing shade around the southern and eastern perimeter of the park area.

A planting strategy has been prepared for each of the destinations within the Stage 1B Public Domain to respond to their unique characteristics, including specifically selected species and aims for contributing to the wider goal of providing a world class public domain for Stage 1B of the Barangaroo site.

The proposed tree planting palette has been selected to include a suitable mix of native and exotic species that represent distinct individual special qualities and diversity of colour, tone, form and texture. From a pragmatic perspective tree species will be required to respond, and thrive, under the sites specific microclimate conditions.

The proposed shrub planting palette will include a mixture of low ground cover, and medium sized shrub planting to ensure that the understory planting areas are enriched with diversity of suitable plant types, flowering colour and texture.

Shrub planting defines two main areas of the proposal. These include the raised planter/seating areas and the understorey planting at the base of the Hickson Park tree belt. For Hickson Park the tree belt planting understory is proposed to be composed of a variety of different native ferns in response to the shade patterns that are proposed by the adjacent building forms and mature tree canopies.

Species of vegetation selected generally have no mid-storey, being low to the ground or having high canopies greater than head height.



**Figure 10 - The proposed landscaping continues from the developed part of the wider site**

Source: Lendlease, Grant Associates, Spiers+Major

### 3.1.8 Lighting

Proposed lighting seeks to ensure suitable levels of light outside of daylight hours, with lighting generally focused around the main thoroughfares of the proposal. The lighting strategy seeks to ensure clear pathways of travel are identified through using suitable downlighting, with lighting provided in vegetation and tree canopies, and street lighting along main vehicular thoroughfares.

### 3.1.9 Security

It is expected that a formal roaming security presence will be prevalent throughout the public domain on an ongoing basis once the public domain is accessible to members of the general public.

## 4.0 Nature of Recorded Crime

Crime statistics obtained from the NSW Bureau of Crime Statistics and Research (BOCSAR) represents criminal incidents recorded by NSW Police. A review of the local statistics for 2016<sup>1</sup> found that the most commonly occurring major offence crimes within the City of Sydney LGA (rates per 100,000 persons) were:

- fraud;
- assault - non-domestic violence related;
- malicious damage to property;
- stealing from a retail store;
- stealing from a motor vehicle;
- stealing from a person;
- stealing from a dwelling; and
- assault - domestic violence related.

As shown in **Figures 11** through **17**, the BOCSAR database indicates that the site is located within or on the periphery of a hotspot for the following crimes:

- assault – non-domestic violence related;
- assault – domestic violence related;
- breaking and entering non-dwelling;
- stealing from dwelling;
- steal from person;
- stealing from motor vehicle; and
- malicious damage to property.

---

<sup>1</sup> The most recent crime data available in relation to all crimes affecting the site/Sydney LGA is 2016

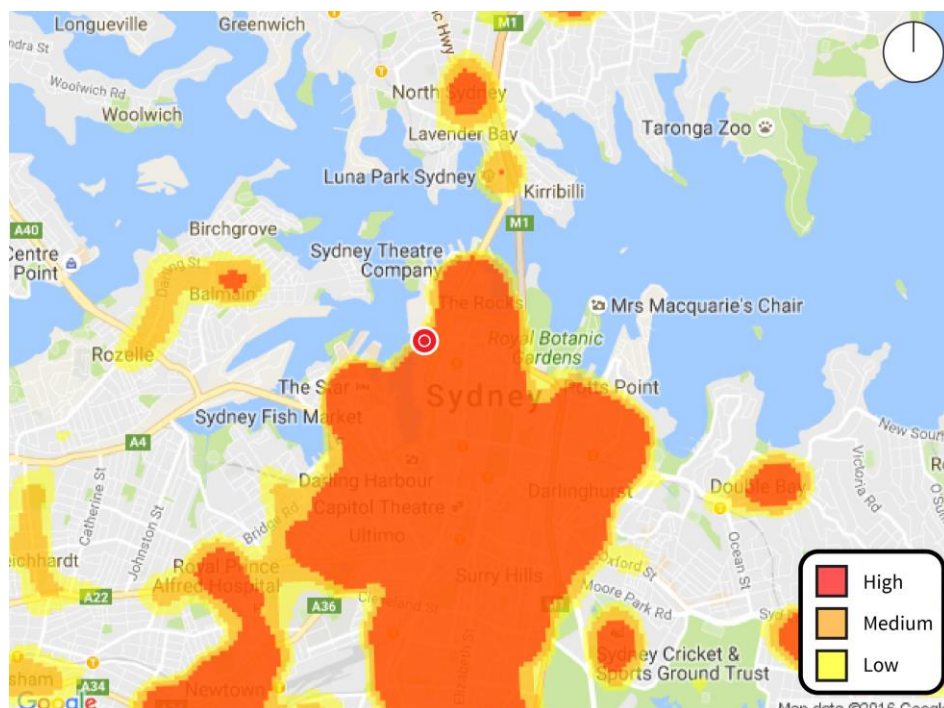
Notwithstanding the above, hotspots indicate areas of high crime density (number of incidents per 50m by 50m) relative to crime concentrations across NSW. They are not adjusted for the number of residents and visitors in the area and thus may not reflect the risk of victimisation. It is noted that the BOCSAR statistics indicate that the majority of the Sydney CBD is included within these hotspot areas.

**Table 1 - NSW Recorded Crime Statistics 2014-2016, Sydney (suburb) Conclusion**

| Crime                                   | Incidents in 2014 | Incidents in 2015 | Incidents in 2016 | 2014-2016 Trend | Rate per 100,000 population (2016) |
|-----------------------------------------|-------------------|-------------------|-------------------|-----------------|------------------------------------|
| Assault – non-domestic violence related | 971               | 9902              | 934               | Stable          | 5189.5                             |
| Assault – domestic violence related     | 123               | 121               | 122               | Stable          | 677.9                              |
| Break and enter – non-dwelling          | 261               | 127               | 88                | Down            | 488.9                              |
| Steal from dwelling                     | 57                | 49                | 48                | Stable          | 266.7                              |
| Steal from person                       | 828               | 814               | 686               | Down            | 3811.5                             |
| Steal from motor vehicle                | 189               | 205               | 228               | Stable          | 1266.8                             |
| Malicious damage to property            | 411               | 420               | 379               | Down            | 2333.6                             |

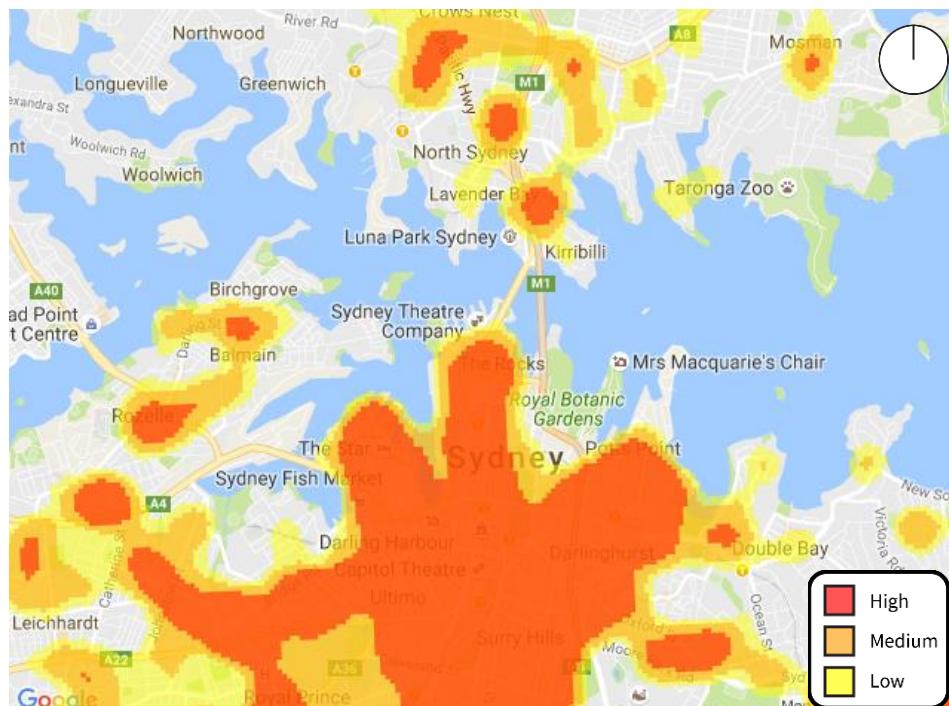
Source: Bureau of Crime Statistics and Research NSW, 2016

*Note – BOCSAR's crime mapping tools place the site within the suburb of Barangaroo, however data for Barangaroo is unavailable. In its absence, Sydney (suburb) represents an existing density and type of development similar to that currently being constructed adjacent the site.*



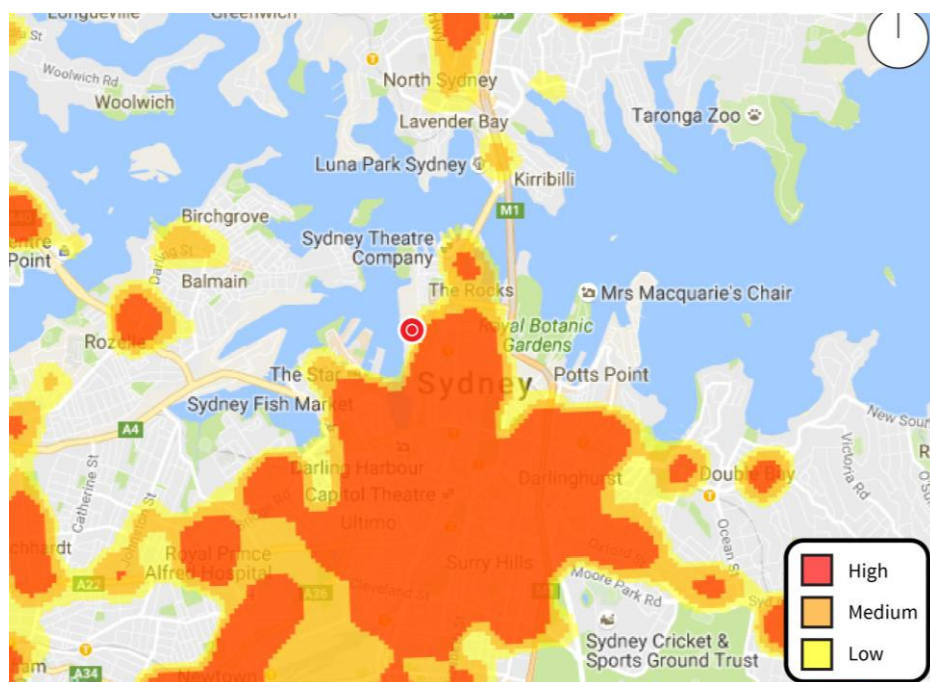
**Figure 11 - Hotspot map – assault – non-domestic violence related**

Source: BOCSAR



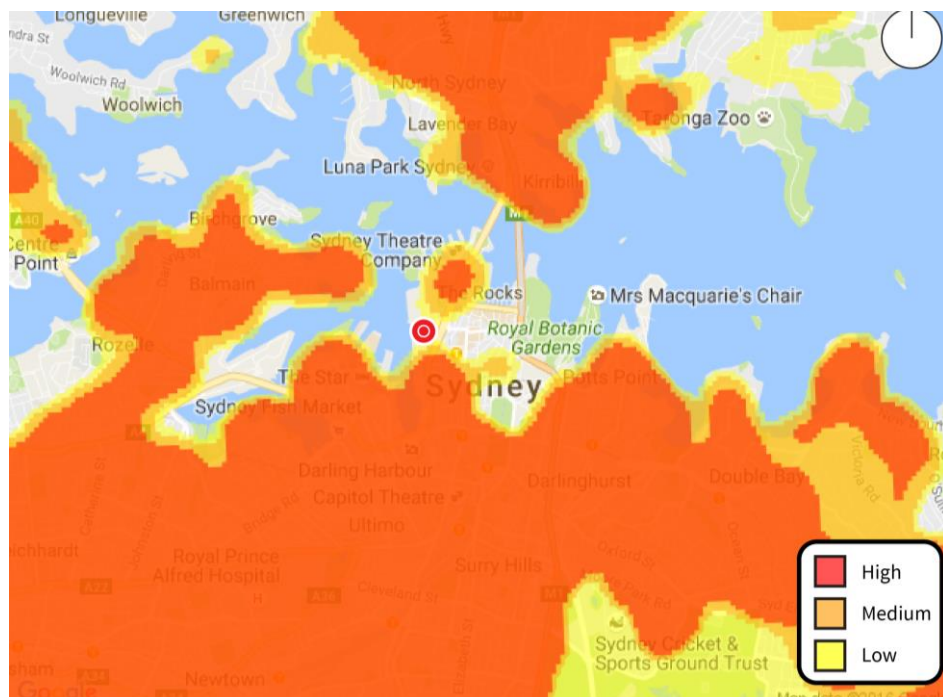
**Figure 12 - Hotspot map – assault –domestic violence related**

Source: BOCSAR



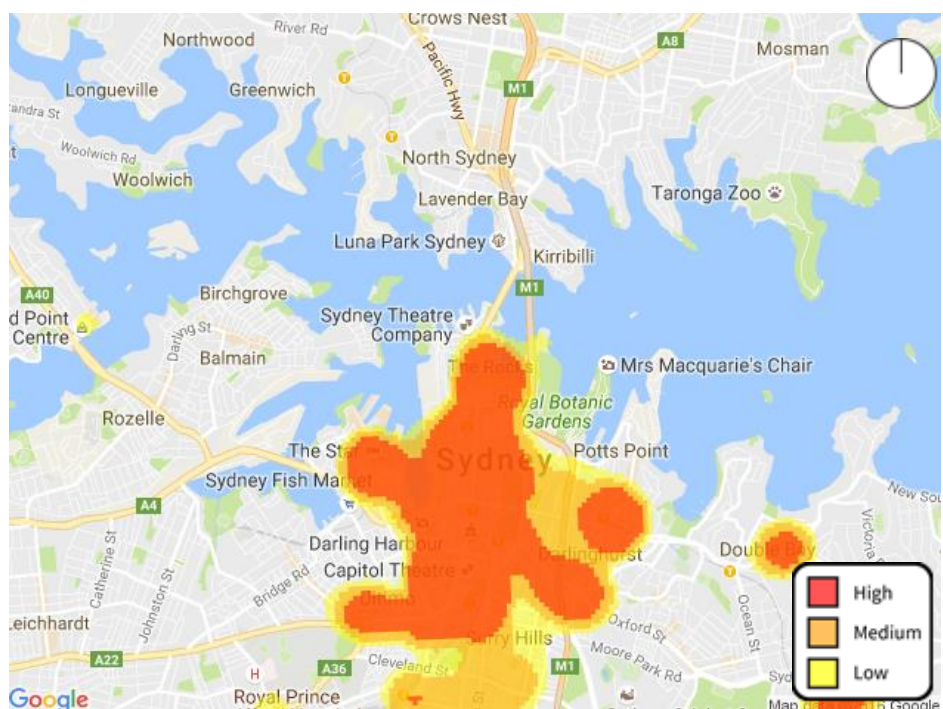
**Figure 13 - Hotspot map – breaking and entering non-dwelling**

Source: BOCSAR



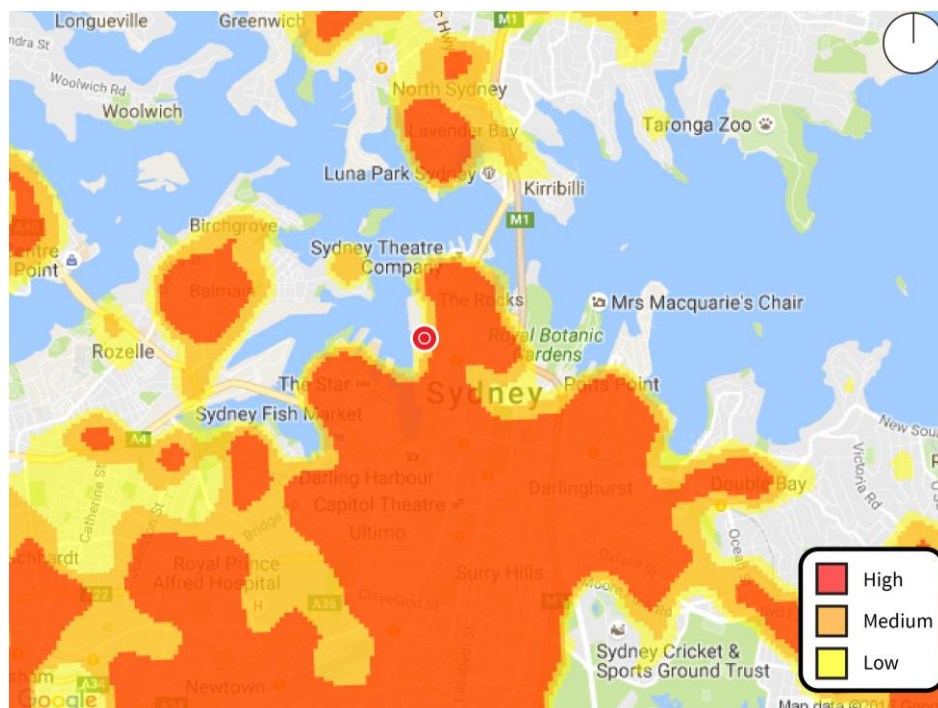
**Figure 14 - Hotspot map – stealing from dwelling**

Source: BOCSAR



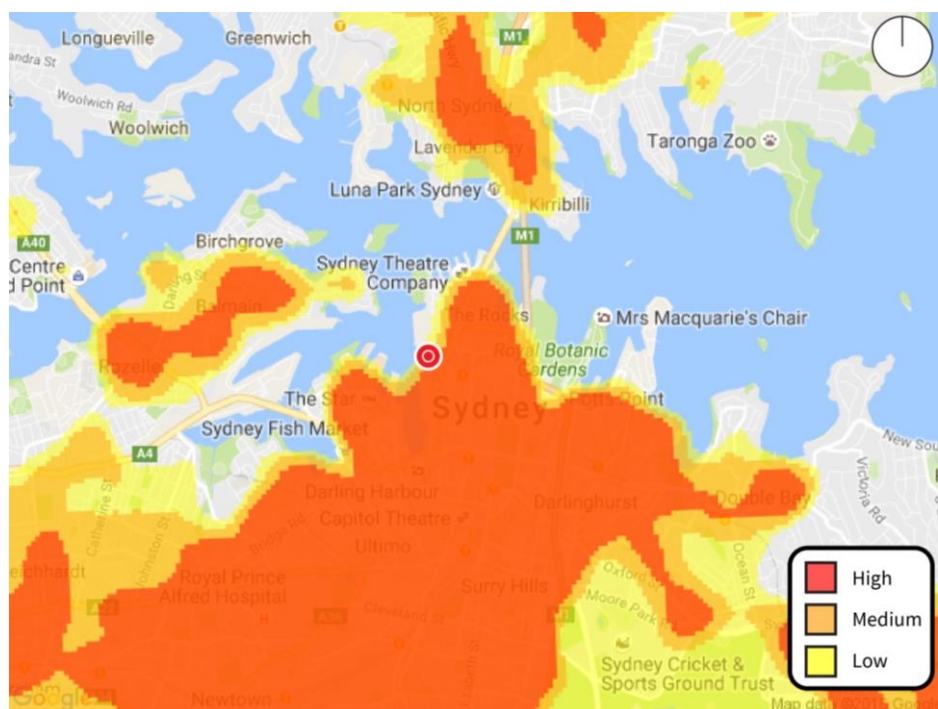
**Figure 15 - Hotspot map – stealing from person**

Source: BOCSAR



**Figure 16 - Hotspot map – stealing from motor vehicle**

Source: BOCSAR



**Figure 17 - Hotspot map – malicious damage to property**

Source: BOCSAR

## 4.1 Crime Prevention Strategy

The City of Sydney have several community safety policies, including the Safe City program. This program seeks to address the safety and security issues of people who live and work within the local area. The program focuses on preventing crime, and has included strategies such as installing street safety cameras in hot spot areas, working with communities to resolve specific crime and safety concerns and producing educational campaigns to promote safety and encourage crime reporting.

## 5.0 Matters for Consideration

A potential perpetrator can take advantage of the environment, with access and the opportunity for concealment significantly affecting the safety and perceived safety of an environment. Given break and enter, malicious damage to property, assault and theft offences are likely to be the main criminal offences affecting the users of the proposed development, the following is an assessment of the proposed development's potential to create opportunities for such crimes.

The proposed development features a unique and complex mix of uses. The proposal encompasses public domain spaces with a variety of aesthetics including open space, walkways and boardwalks with water access. For this reason, understanding the relationship of these uses is integral in forming recommendations for crime reduction. This unique context underpins an assessment of the proposed development in accordance with the CPTED principles.

### 5.1 Surveillance

Effective natural and incidental surveillance can reduce the opportunities for crime. The principle indicates that offenders are often deterred from committing a crime in areas with high levels of natural surveillance. The following design interventions benefit optimal natural surveillance;

- Clear sight lines between public and private places
- Appropriate lighting and effective guardianship of communal and/or public areas
- Minimal opportunity for offenders to conceal themselves and entrap victims

There are currently minimal surveillance opportunities from the existing buildings surrounding the site. Generally, opportunities for natural surveillance will be significantly increased as the proposed development of the area with future residential and mixed-use buildings bringing an unprecedented amount of activity to the space. These buildings include the One Sydney Harbour development (three residential towers), the Crown Sydney Hotel Resort and the Wulugul Walk along the foreshore. A future building is proposed within Block 5 of Barangaroo Central to the north of the site which will assist in additional surveillance opportunities from that direction. The public nature of the proposed public domain development benefits opportunities for natural surveillance as the location and time of activities is significantly varied. This creates a higher level of occupancy and in turn increase the opportunities for natural surveillance.

The proposed development extends across several publicly accessible spaces, including Hickson Park, Watermans Cove and the Wulugul Walk and boardwalk. With the proposed ongoing

development of Barangaroo South and the removal of construction hoarding, the site will be opened and more visible from surrounding buildings and pedestrian users of the area.

The proposed water level pontoon at the northern end of the public domain area may introduce obscuring of some oblique sightlines due to the height difference between that jetty and the boardwalk, with this exaggerated during low tides (**Figure 18**). It is therefore recommended that sufficient lighting, as identified in the Public Realm Lighting Plan, be provided in the space to reduce the opportunity for concealment as well as reducing fear and increasing visibility. The use of technical supervision, such as CCTV cameras, should be considered to provide an additional layer of comfort for users of the space. Generally, the tiered nature of Watermans Cove and the boardwalk area allows for sightlines from the shore towards the waterfront.

The future use and design of facilities to be located on the pier at the southern end of Wulugul Walk will be subject to future assessment when details of the design have been developed.



**Figure 18 - The pontoon area contains some oblique sightlines due to height differences (tide dependent)**

Considering amenity considerations, the proposed landscaping has been designed to distribute sightlines along key pedestrian corridors. If not designed properly or maintained appropriately, however, it can offer concealment opportunities and reduce the opportunity for surveillance. The selected tree species are all generally high canopy species, with minimal mid-storey tree species being selected. Low storey and ground shrubs are proposed in parts, namely towards the western side of Hickson Park and along road and pedestrian corridors. This reduces the potential for sightlines to be interrupted by mid-storey vegetation, and is beneficial for natural surveillance.

Maintenance of these will need to be rigorous to ensure they remain at a level that does not intrude on sightlines. Recommendations are provided in Section 6.0.

Given the alignments of the pedestrian and vehicular corridors, it is considered that connections along these roadways will be enhanced and 'natural surveillance' opportunities maximised from the future adjacent residential and commercial development. This will result in an increased risk to potential offenders. All landscaping provided in the development should be the subject of a maintenance regime to ensure sightlines and natural surveillance opportunities are promoted.

The low scale amenities and storage building proposed at the eastern boundary of Hickson Park will introduce general opportunities for surveillance across the wider expanse of the park area. The park itself is proposed to be a wide turfed space allowing for clear sightlines across its expanse. Seating in and around this area, and also along Wulugul Walk, will encourage use of the public domain space and therefore improve natural policing.

Way finding in large environments can be confusing. Knowing where and how to traverse through the site can impact perceptions of safety. The general layout of the public domain will sufficiently provide a legible environment; however, adequate signage should be provided to reinforce wayfinding. This signage may be in the form of building identification signs, such as building name or address signs, or directional signage to key features such as retail outlets and lobbies of residential and commercial towers or other key elements of the development.

It is expected that the use of sufficient lighting, high quality finishes and appropriate signage will ensure that surveillance opportunities throughout the public domain are maximised and the public nature of the space is clear. It is understood that communication measures such as a public address system and an intercom system are to be installed throughout the public domain. The public address system will provide an opportunity for announcements to be communicated audibly within the public domain. An intercom system will be installed in key locations for users to call for assistance in an emergency or when feeling unsafe. Intercom systems are simple and easy to use measures to ensure that users can call security if they feel unsafe or are in trouble.

It is recommended that CCTV cameras be used to provide formal surveillance on site to increase the perceived risk of capture to potential offenders. CCTV cameras should be placed at key entries and exits and in other strategic areas of congregation to provide maximum surveillance.

## **5.2 Lighting/Technical Supervision**

Effective lighting can reduce fear by improving visibility and increasing the likelihood of offenders being detected. All lighting provided in and around the development should meet the minimum Australian Lighting Standard AS/NZ 1158 for public streets, car parks and pedestrian areas, specifically addressing the objectives for crime and fear reduction as outlined in the Australian Standards.

It is recommended that lighting be provided in and throughout the public domain area, particularly along the movement corridors and areas of congregation to facilitate surveillance opportunities and reduce the opportunity for predatory crimes, malicious damage and other offences, especially given the nature of crime prevalent in the City of Sydney LGA.

All lighting proposed within the public domain spaces should meet the minimum or preferably exceed the Australian and New Zealand Standards and objectives for crime and fear reduction as outlined in Australian Lighting Standard AS/NZ1158 for public streets, car parks and pedestrian areas. Lighting should be adequate to permit facial recognition, informal surveillance and reduce the threat of predatory crime, including lighting in and around the mature trees of Hickson Park. It is noted that smart poles are proposed along key pedestrian movement corridors throughout the public domain area.

As discussed above, the lower jetty level along the waterfront has the potential to create possible concealment opportunities due to oblique sightlines being obscured. It is therefore recommended that bright and even lighting be provided in the space to reduce the opportunity for concealment as well as reducing fear and increasing visibility. The use of technical supervision, such as CCTV cameras, should be considered to discourage loitering in the space.

If CCTV cameras are to be used, these should cover the most important components of the development, such as pedestrian and vehicle entries. The cameras should be vandal resistant and clearly identify and record faces, shapes and colours.

### **5.3 Territorial Reinforcement**

Territorial reinforcement involves the perceived ownership of public spaces. Users will be more inclined to visit areas that are maintained and to which they feel a sense of belonging. A well-used and dynamic public space is made safer by natural surveillance. Designing with clear transition between public and private spaces, and clear design cues indicating the intended use of space is critical. Well maintained public space encourages occupancy, both in the interior and exterior of the development.

The clear definition of the public and private territory and the introduction of a greater number of people on the site will naturally increase the risk to an offender and promote territorial reinforcement of the site, as criminals do not want to be detected, challenged or apprehended.

The landscaping proposed will reinforce this principle and provide a clear indication of the distinction between private and public domain, eliminating 'excuses' for people to loiter in the clearly defined private spaces. The public spaces are plainly identified using garden beds and the proposed variations in paving, boardwalk and road materials ensures that it is clear when entering the public domain spaces. The quality of the landscaping to be installed onsite, and the change in landscape and paving treatments to identify the Barangaroo precinct clearly delineate the boundary of the public domain space.

Suitable wayfinding signage at the perimeter of the development is recommended to help reduce the opportunities for people to find excuses to gain unauthorised access and/or to loiter in areas of the development or immediately adjacent to entries. All access points to the public domain and park spaces appear to be legible and inviting and signage will enhance this perception.

### **5.4 Environmental Maintenance**

There is a strong association between environmental maintenance and the fear or perceived fear of crime. General image can greatly affect the individual's desire to enter and engage with a space. Environmental maintenance and territorial reinforcement are co-dependent in achieving a safer space, and are integral in achieving optimal natural surveillance. The maintenance of the built form,

landscaping and lighting will assist in communicating care and the presence of effective guardianship.

Contrasting its current form, the proposed development will greatly enhance the image of the site. The proposed development will provide a high quality urban environment which will display a clarity of ownership and land use, as well as increase levels of activity during the day and night through more people being located on the site. The image of an area can impact upon feelings of safety and danger; influence local confidence; and affect individual decisions to withdraw or engage in community life. Given the quality and design of the proposed development and the comprehensive landscaping to be provided, it will enhance and redefine the image of the area.

The ongoing maintenance of the proposed public domain spaces and associated landscaping is important to balance safety and aesthetics of the development. Well maintained spaces encourage regular use and activity, which in turn creates natural supervision of public areas and enhances feelings of safety. The use of high quality materials for construction and established planting should be used to lessen the likelihood of damage and to help reduce maintenance costs. A consistent and rigorous maintenance regime is recommended.

In addition to standard environmental maintenance, consideration should be given to the quantity of unfixed equipment and materials required for the maintenance of watercraft. If these items are not correctly maintained and stored, it is possible that could benefit potential offenders as a projectile or weapon. Recommendations for environmental maintenance are detailed in Section 6.1 of this report

## **5.5 Activity and Space Management**

Similar to environmental maintenance, there is a strong association between activity and space management, and the fear or perceived fear of crime. Unlike environmental maintenance, this principle endeavours to manage dynamic activity and use of space.

A logical consideration of activity and space management is evident in the proposed development. The design of the proposed development shows a clear separation of conflicting uses, and appropriate amount of access to these uses.

The introduction of a greater number of people on site will increase activity of the area during both the day and night, subject to the completion of the remaining Barangaroo South developments. The waterfront and other public domain features will naturally attract people to use the space, resulting in people staying in the area for longer periods of time, rather than travelling directly through.

This in turn is likely to increase surveillance and natural community policing. As image can impact upon feelings of safety and danger, influence local confidence and individual decisions to either withdrawn or engage in community life the proposed One Sydney Harbour and Crown Sydney Hotel Resort developments, and the recently completed commercial buildings to the south will greatly enhance the image of the site and in doing so provide a vibrant and regularly used area.

## **5.6 Access Control**

Access control strategies restrict, channel and encourage the movement of people and vehicles into and around designated areas. Physical barriers increase the effort required to commit crime.

Access control strategies are well considered and clearly evident in the proposed development. The proposed development includes three types of access;

- Primary access – connects external public spaces and pathways to the proposed public domain areas through the use of clearly defined pavement and directional signage.
- Secondary – provides access to specific areas within the proposed development such as the amenities block and storage areas, and the future residential tower entry points
- Vehicle and watercraft – vehicular access is provided along the clearly defined roadways. Watercraft can access the space via the jetty at Wulugul Walk.

The proposed development identifies several bollard type barriers and edging treatments to direct pedestrian and vehicular movement through the public domain area in appropriate travel patterns. These bollards and access control devices are less about restriction but more about guidance and way-finding. The public nature of the proposal and the use of these techniques will assist in guiding pedestrians through the public domain space. Effective bollards should be used in some form to restrict vehicles and large trucks from entering these pedestrian areas.

Additionally, it is envisaged that the future buildings within the site footprint will be provided with appropriate access control devices including security gates and locks on windows and doors.

## 5.7 Design, Definition and Designation

The design of the development reflects its purpose, which makes it difficult for potential offenders to make excuses about their presence and actions. Opportunistic criminals will often exploit areas with unclear spatial definition, borders and boundaries.

The proposed development is clear in defining spaces and in the designation of the area as public domain and suitable for public use, therefore it is considered consistent with this principle. In particular, as outlined previously the public domain spaces are clearly defined through the use of paving, boardwalk and vegetation types. Wayfinding signage will be useful in ensuring that users of the space are aware of the entry points to the public spaces.

## 6.0 Crime Risk Rating and Recommendations

Combining the area context and an understanding of the future development of the surrounding area in conjunction with an assessment of the issues discussed in previous sections of this report, the Crime Risk Assessment of the proposed development is 'moderate'. This is more a product of the city location itself than any particular design matters.

Notwithstanding this, recommendations to further improve the safety and security of the development include:

- Use tree species with high canopies to provide for clear sightlines at eye level. A strict regime of maintenance of species with low (1m maximum height for shrubs) and mid canopies (tree

canopies at maturity should be no less than 1.8m) is to be implemented if these species are provided within the final landscaping scheme.

- Provide way finding signage and building identification signage where appropriate to reinforce perceptions of safety and legibility in the development.
- Install CCTV cameras, especially in areas which could potentially be used for loitering/concealment. If CCTV cameras are to be provided, they should be used in conjunction with adequate illumination to ensure clear CCTV footage can be captured.
- Provide appropriate lighting, high quality finishes to ensure that surveillance opportunities are maximised and ownership over the space is clear. Lighting should minimise light spill/pollution.
- Provide appropriate lighting in and around the development and consult a qualified lighting engineer to ensure the correct lighting is provided to meet the minimum (and preferably exceed) Australia and New Zealand Lighting Standards, and ensure lighting is sufficient and appropriate enough to enable surveillance.
- Outdoor lighting is recommended to have a minimum Colour Rendering Index (CRI) of 60.
- It is recommended that exterior lighting be consistent. 'Inactive' lighting is not recommended in public spaces.
- Installation of vehicle grade bollards to reduce vehicle and truck access.
- Ensure mechanisms are in place for on-going maintenance of landscaping and the building, which includes:
  - rapid removal policy for vandalism repair and the removal of graffiti;
  - maintenance of perimeter landscaping; and
  - maintenance of public furniture and access pathways.
- Use high quality materials for construction to lessen the likelihood of damage and help to reduce maintenance costs.